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EXAMINER	
CULLEN, SEAN P	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,551	VIVIEN ET AL.	
	Examiner	Art Unit	
	Sean P. Cullen	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 May 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/16/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the labels of the drawing (Fig. 1b) are in French. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 13 is objected to because of the following informalities:

"(claim 10)" in line 2 of claim 13 should be replaced with "claim 10."

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 19 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4-5, 8, 16, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the suction nozzle" in line 6, "said valve for the admission of water from the aquatic medium" in lines 7-8, "the outlet nozzle" in line 9, "the admission nozzle" in line 24 and "said discharge valve" in line 26. There is insufficient antecedent basis for this limitation in the claim. Claim 4 also recites the limitation "a device for the circulation of the activation electrolyte and the separation of the effluents" in lines 18-19. Claim 1 recites "a device" in lines 1-2. It is unclear if these devices are the same or separate.

Claim 5 recites the limitation "the effluent discharge valve" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites "said device for the circulation of the electrolyte." It is unclear if this device differs from the devices recited in claims 1 and 4.

Claim 16 recites the limitation "the flow of activation electrolyte" in line 7. Claim 6 recites a direct, derivative and thermostatically-controlled flow of activation electrolyte. It is unclear what flow claim 16 is referring. Claim 16 also recites the limitation "the inlet of the device" in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 also recites the limitation "the propulsive and control rear portion of the device" in lines 14-15. There is insufficient antecedent basis for this limitation in the claim.

For the purpose of this office action, "a device" recited in claim 1 will be considered as the device containing the electrical cell. "A device" recited in claim 4 and 8 will be considered as the device for the circulation of the activation electrolyte and the separation of effluents. "The flow" recited in claim 16 will be considered as the flow of thermostatically-controlled activation electrolyte.

Claim 19 provides for the use of an electrical propulsion cell, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Regarding claim19, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-2, 4-8, 10 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542).

Regarding claim 1, Tribioli et al. discloses an electrical cell (1, see electrolyte-activated battery, abstract) for the propulsion of a device in an aquatic medium (abstract), characterized in that it comprises at least in a sealed body (2):

- a chamber (3) comprising an auxiliary electrical cell (29) and
- a command and control module (199) for the electrical propulsion cell (see electrolyte-activated battery, abstract);
- a chamber (3) comprising a main electrical cell (7) of the electrochemical type (see electrochemical cell, C3/L1-3),
- said chamber (3) being provided with members (9) for the controlled admission and the regulation of a flow of water from the aquatic medium into said second chamber (C3/L12-17),
- which forms a reservoir (8), in order to form, after the command to admit water from the aquatic medium, an electrolyte (E) for activating said main electrical cell (C3/L1-3);
- a module (Fig. 2) for triggering the admission by suction of water from the aquatic medium and the discharge by escape of effluents resulting from the chemical reaction of the main cell into the aquatic medium (C3/L25-32),
- from an admission valve (16) and an escape valve (17), respectively,
- said command and control module (199) of the electrical propulsion cell permitting the activation of said auxiliary electrical cell (29) in order to generate electrical energy temporarily during a stage of launching said device in an aquatic medium (C3/L40-42), and

- the triggering of the admission by suction of water from the aquatic medium (C8/L21-31) and the discharge by escape of effluents in order to produce electrical energy from said main electrical cell (7) during a cruise phase (C8/L57-C9/L8) to separate the auxiliary cell and command and control module from the reservoir (8) to protect them from the electrolyte (E).

Tribioli et al. does not explicitly disclose:

- a first chamber
- a second chamber
- a third chamber

Charlot et al. discloses an electrical propulsion cell (3) housed in a sealed cell body (1) comprised of a first and second chamber (Fig. 1) with said first chamber housing an auxiliary cell (11) and command and control module (15) to separate the auxiliary cell from the activation electrolyte (P3/L45-51). Leben et al. discloses a third chamber (32) housing a module for triggering the admission by suction of water from the aquatic medium and the discharge by escape of effluents (C3/L7-10) from an admission valve (4) and escape valve (9) to allow for removal of used electrolyte while maintaining the operation of the cell (C3/L46-59). Tribioli et al. and Charlot et al. are analogous art because they are directed to sealed cell bodies contain main and auxiliary electrical cells used for the propulsion of the said sealed cell body. Tribioli et al. and Leben et al. are analogous art because they are directed to sea water batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make sealed cell body of Tribioli et al. using the first chamber of Charlot et al. to separate the auxiliary

cell from the activation electrolyte and the third chamber of Leben et al. to allow for the removal of used electrolyte while maintaining the operation of the cell.

Regarding claim 2, modified Tribioli et al. discloses all claim limitations set forth above as applied to claim 1 and further discloses an electrical cell:

- characterized in that said auxiliary (29) and main electrical cells (7) are controlled sequentially by said command and control module (199, C3/L40-42) of the electrical propulsion cell (see electrolyte-activated battery, abstract) and
- are connected respectively to a main and secondary electrical energy distribution network (dotted lines in Fig. 1).

Regarding claim 4, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said members (9) for the controlled admission and the regulation of a flow of water from the aquatic medium (C3/L12-17) into said second chamber comprise at least:
- a motor-driven pump unit (10, C3/L40-42),
- the suction nozzle (24) of which is connected to said valve (16) for the admission of water from the aquatic medium, and
- the outlet nozzle (30) of which delivers the water sucked in from the aquatic medium directly into said second chamber forming a reservoir (8, C3/L46-62),
- in order to form said activation electrolyte (E) and to immerse said main electrical cell (7) in the latter (C3/L1-3);
- a thermostatic valve (12) connected to said main electrical cell (7, Fig. 1),

- said thermostatic valve (12) regulating the admission of said activation electrolyte into said main cell in order to trigger the activation of said main electrical cell by electrochemical reaction (C3/L46-62):
- a device (13) for the circulation of the activation electrolyte and the separation of the effluents (C5/L29-39),
- said device (13) for circulation and separation comprising an inlet nozzle (45) connected to the internal cavity of said main electrical cell (7, C5/L29-39),
- containing the activation electrolyte (E), a first outlet nozzle (14) connected in the vicinity of the admission nozzle (24) of the motor-driven pump (10) and
- a second effluent outlet nozzle (15) connected to said discharge valve (17, Fig. 1).
- said discharge valve (17) located in said third chamber (19, Fig. 2).

Regarding claim 5, modified Tribioli et al. discloses all claim limitations set forth above as applied to claim 4 and further discloses an electrical cell:

- characterized in that said second outlet nozzle (15) of said device (13) for circulation and separation is connected to said discharge valve (17) located in said third chamber by means of a mode valve (18) which permits the orientation,
- in a first position (see open position, C6/L32-31), of the effluents towards the effluent discharge valve (17) when the main electrical cell (7) is started up during the launch phase (C8/L21-31), and,
- respectively, in a second position (see Fig. 5 position), of the activation electrolyte (E) towards the suction nozzle (24) of the motor-driven pump (10), in

order to generate closed-loop circulation of the activation electrolyte in the main electrical cell (7) during the cruise phase (C8/L57-C9/L8).

Regarding claim 6, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said thermostatic valve (12) is formed by a three-way valve (C3/L50) receiving:
- a direct flow (see stream of hot electrolyte, C3/L46-49) of activation electrolyte drawn from said second chamber forming a reservoir (8),
- a derivative flow (see a stream of electrolyte E cooled by heat exchanger, C3/L46-49) of activation electrolyte passing by way of a heat exchanger (11),
- the derivative flow being maintained at a substantially constant temperature (see setting as required the temperature of electrolyte E supplied to the electrochemical cell, C11/L4-22) by said heat exchanger (11), said thermostatic valve (12) delivering,
- from said direct flow (C3/L46-49) and said derivative flow (C3/L46-49) at a substantially constant temperature acting as a reference temperature, a flow of thermostatically- controlled activation electrolyte at a substantially constant temperature (C11/L4-22) to the internal cavity of said main electrical cell (7).

Regarding claim 7, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said main electrical cell (7) of the electrochemical type is an AgO-A1 cell (C2/L61-67).

Regarding claim 8, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said main electrical cell (7) of the electrochemical type (see electrochemical cell, C3/L1-3) is formed by:
- an electrochemical block (7) constituted by a stack of AgO-A1 electrochemical couples (C2/L61-67) located in the cavity of a sealed module (Fig. 1) connected to said thermostatic valve (12) and to said device for the circulation of the electrolyte (13);
- a reserve of anhydrous sodium hydroxide (A, C2/L61-67), said electrochemical block (7) and said reserve of anhydrous sodium hydroxide (A) being located in said second chamber forming a reservoir (8, Fig. 1).

Regarding claim 10, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- a front collar (top of Fig. 1);
- a front end (6) of the main electrical cell (7),
- a central shell (4);
- a rear end (5),
- said front end (6), said central shell (5) and said rear end (5) forming said second chamber (bottom of Fig. 1);
- a rear collar (Fig. 1),

Modified Tribioli et al. does not explicitly disclose:

- said front collar and said front end forming said third chamber;

- said rear end and said rear collar forming said first chamber.

Charlot et al. discloses an electrical propulsion cell (3) housed in a sealed cell body (1) comprised of a front collar (Fig. 1) and a front end (2b) forming a third chamber (Fig. 1) and a rear end (2b) and a rear collar (Fig. 1) forming a first chamber (Fig. 1) to separate the auxiliary cell and the propulsion mechanism (P3/L39-43) from the activation electrolyte (P3/L45-51). Leben et al. discloses a third chamber (32) formed from a front collar (1) and front end (35) to allow for removal of used electrolyte while maintaining the operation of the cell (C3/L46-59). Tribioli et al. and Charlot et al. are analogous art because they are directed to sealed cell bodies contain main and auxiliary electrical cells used for the propulsion of the said sealed cell body. Tribioli et al. and Leben et al. are analogous art because they are directed to sea water batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make sealed cell body of Tribioli et al. using the first chamber of Charlot et al. to separate the auxiliary cell from the activation electrolyte and the third chamber of Leben et al. to allow for the removal of used electrolyte while maintaining the operation of the cell.

Regarding claim 17, modified Tribioli et al. discloses all claim limitations set forth above and further discloses:

- characterized in that the front collar (top of Fig. 1), the central shell (4) and the rear collar (bottom of Fig. 1) have a substantially cylindrical cross-section of revolution (C2/L58-60).

Regarding claim 18, modified Tribioli et al. discloses all claim limitations set forth above and further discloses:

- characterized in that the front collar (top of Fig. 1) and the rear collar (bottom of Fig. 1) have a distal end which is open with respect to the front end (6) and the rear end (5),
- in order to construct said electrical propulsion cell (1) in the form of an independent module (3) which can be stored as a substantially inert component (C2/L61-67) with its charge of anhydrous sodium hydroxide reserve (A) when the electrical propulsion cell is not mounted with the device (2),
- in the form of an element integrated directly (Fig. 1) in the body of the device (2),
- the distal end of said front collar (top of Fig. 1) being secured mechanically and coupled electrically (Fig. 1) to an active portion of the device (2) and
- the distal end of the rear collar (bottom of Fig. 1) being secured mechanically and coupled electrically (C5/L9-16) to the propulsive and control rear portion of the device (2)
- in order to constitute an electrical propulsion cell (1) which can be activated as soon as the device (2) is launched (C8/L21-21).

Regarding claim 19, modified Tribioli et al. discloses all claim limitations set forth above and further discloses the use of an electrical cell (1) for the propulsion of a device (2) in an aquatic medium:

- for the supply of power to, the propulsion and the control of a device (C2/L55-57), such as a **torpedo**, a reconnaissance submarine or a surface device (C2/L55-57).

Regarding claim 20, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said main electrical cell (7) of the electrochemical type is an AgO-A1 cell (C2/L61-67).

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 1 above, in further view of McDermott (US 2003/0228516).

Regarding claim 3, modified Tribioli et al. discloses all claim limitations set forth above, but does not explicitly disclose an electrical cell:

- characterized in that said auxiliary electrical cell is formed by a set of thermal cell elements started up by pyrotechnic ignition.

McDermott discloses an auxiliary electrical cell (see reserve battery, [0009]) formed by a set of thermal cell elements (see thermal battery, [0009]) started up by pyrotechnic ignition [0009] to power vehicles during launch in defense applications [0012]. Tribioli et al. and McDermott are analogous art because they are directed to the powering of devices during their launch. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of modified Tribioli et al. using the auxiliary electrical cell of McDermott to power the device during launch.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 8, in further view of Tucker et al. (U.S. 5,733,679).

Regarding claim 9, modified Tribioli et al. discloses all claim limitations set forth above and further discloses an electrical cell:

- characterized in that said anhydrous sodium hydroxide reserve (A) charged in bulk into said second chamber forming a reservoir (8, C2/L61-67, Fig. 1).

Modified Tribioli et al. does not explicitly disclose:

- said anhydrous sodium hydroxide reserve is constituted by a mixture of micropellets of anhydrous sodium hydroxide and powder-form stannates

Tucker et al. discloses, in an AgO-Al battery (see aluminum-silver oxide battery, C2/L11-27) to power underwater vehicles (C1/L46-55) a reserve (12) constituted by a mixture of micropellets of anhydrous sodium hydroxide (C1/L46-55) and powder-form stannates (see sodium stannate, C2/L11-27) to inhibit corrosion of the aluminum anode (C2/L24-27). Tribioli et al. and Tucker et al. are analogous art because they are directed to the powering of underwater vehicles using AgO-Al batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of modified Tribioli et al. using the stannate additive of Tucker et al. in the anhydrous sodium hydroxide reserve to prevent corrosion of the aluminum anode.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 10, in further view of DiFrancesco et al. (U.S. 5,199,487).

Regarding claim 11, modified Tribioli et al. discloses all claim limitations set forth above and further discloses and electrical cell:

- a portion (11) at least of said central shell (4) which is located in the vicinity of said main electrical cell (7, Fig. 1) constituting a heat exchanger (11) with said aquatic medium (C3/L44-62), to form a heat exchanger (11) for at least a derivative flow of activation electrolyte (C3/L44-62).

Modified Tribioli et al. does not explicitly disclose:

- characterized in that said central shell at least is constituted by a metal alloy which is a good heat conductor,

DiFrancesco et al. discloses a heat exchanger (abstract) composed of a metal alloy (see aluminum, C4/L13-16) to provide proper weight constraints needed for torpedo devices (C2/L11-14). Tribioli et al. and DiFrancesco et al. are analogous art because they are directed to torpedo devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of modified Tribioli et al. using the metal alloy of DiFrancesco et al. to provide proper weight constraints needed for torpedo devices.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 10 above, in further view of Rigo et al. (U.S. 4,108,736).

Regarding claim 12, modified Tribioli et al. discloses all claim limitations set forth above, but does not explicitly disclose an electrical cell:

- characterized in that the front collar, the front end of the electrical cell, the central shell, the rear end of the electrical cell and the rear collar are composed of a metal material,
- the external face thereof which is to be in contact with the aquatic medium being provided with a protective anti-corrosion layer obtained by hard anodic oxidation.

Rigo et al. discloses a surface coating (abstract) with a protective anti-corrosion layer (C2/L16-13) obtained by hard anodic oxidation (abstract) to provide protection to substrates against corrosion (C1/L9-16). Tribioli et al. and Rigo et al. are analogous art because they are directed to metal substrates in corrosive environments. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of Tribioli et al. using the surface layer of Rigo et al. to provide protection to the substrate against corrosion.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 10 above, in further view of Sunshine et al. (U.S. 6,033,602).

Regarding claim 13, modified Tribioli et al. discloses all claim limitations set forth above, but does not explicitly disclose an electrical cell:

- characterized in that the internal face of the front end of the electrical cell, of the central shell and of the rear end of the electrical cell constituting said second chamber forming a reservoir comprise a chemical nickel coating for protection against corrosion by the anhydrous sodium hydroxide.

Sunshine et al. discloses a nickel coating (C2/L53-67) used in a sea water activated battery (abstract) to provide chemical inertness (C1/L29-35). Tribioli et al. and Sunshine et al. are analogous art because they are directed to sea water activated batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of modified Tribioli et al. using the nickel coating of Sunshine et al. to provide chemical inertness to the internal face of said components.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) and in further view of DiFrancesco et al. (U.S. 5,199,487) as applied to claim 11 above, in further view of Rigo et al. (U.S. 4,108,736).

Regarding claim 14, modified Tribioli et al. discloses all claim limitations set forth above, but does not explicitly disclose an electrical cell:

- characterized in that the internal face of said central shell, except for the portion forming the heat exchanger, also comprises a thermally insulating coating at the portion forming a reservoir for the activation electrolyte, in order to reduce the

cooling of the stored activation electrolyte by heat exchange with the aquatic medium during the cruise phase.

Rigo et al. discloses a surface coating (abstract) with a protective anti-corrosion layer which is highly insulating to provide protection (C2/L16-13) to protect substrates against corrosion (C1/L9-16). Tribioli et al. and Rigo et al. are analogous art because they are directed to metal substrates in corrosive environments. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of Tribioli et al. using the surface layer of Rigo et al. to provide protection to the substrate against corrosion while providing insulation.

16. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 10 above, in further view of Honer (U.S. 3,966,497).

Regarding claim 15, modified Tribioli et al. discloses all claim limitations set forth above, but does not explicitly disclose an electrical cell:

- characterized in that said sealed cell body is provided with a double sealing barrier with respect to said aquatic medium:
- a first sealing barrier formed by a seal between the aquatic medium and the first chamber, and the third chamber respectively;
- a second sealing barrier formed by a seal between the first and second chamber and the second and third chamber, respectively.

Honer discloses, in a sea water battery a first and second sealing barrier (12a and 12b, abstract) to produce an economical electrical cell (abstract). Tribioli et al. and Honer are analogous art because they are directed to sea water batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell of modified Tribioli et al. using the sealing barriers of Honer to seal the first, second and third chamber to produce an economical electrical cell.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribioli et al. (U.S. 5,506,065) in view of Charlot et al. (EP 0307292, see machine translation) and Leben et al. (U.S. 4,752,542) as applied to claim 10 above, in further view of Desa et al. (U.S. 2003/0179652).

Regarding claim 16, modified Tribioli et al. discloses all claim limitations set forth above as applied to claim 10 above and further discloses an electrical cell:

- A temperature sensor (206) for the flow of activation electrolyte (A) entering and leaving the main electrical cell (7), in order to be able to regulate the temperature of the flow of activation electrolyte (E) by means of said thermostatic valve (12, C11/L4-22);
- a plurality of contacts (183, 188, 189), a contact for sealing the valve for the admission of water from the aquatic medium (C3/L12-17), a contact for opening the valve for the admission of water to the sealed cell body (C3/L12-17).

Tribioli et al. does not explicitly disclose:

- a plurality of temperature sensors

- a plurality of sensors for sensing the relative pressure of the activation electrolyte in the second chamber forming a reservoir, of the activation electrolyte at the inlet of the device for the circulation of the activation electrolyte and for the separation of the effluents, said sensors of relative pressure delivering a relative pressure value with respect to the pressure outside the sealed cell body;

Desa et al. discloses a plurality of temperature and pressure sensors [0026] to control a water-based device [0040]. Tribioli et al. and Desa et al. are analogous art because they are directed to water-based devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the electrical propulsion cell using the plurality of temperature and pressure sensors to Desa et al. to control a water-based device.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen whose telephone number is 571-270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/S. P. C./
Examiner, Art Unit 1795

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 1795